

Jongwook Bae

M.S.



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Summary

Artificial Intelligence M.S. graduate from Hanyang University with a background in mechanical engineering B.S. Experienced in developing large-scale datasets, setting up robots, and managing AI projects. Fluent in English and German, adept at navigating multicultural environments with extensive travel experience to +40 countries

Tech stack

- Programming: Python, Pytorch, ROS, Git, Docker, Linux, OpenCV
- 3D Modeling: SOLIDWORKS, CATIA, AutoCAD, Sketchup • Matlab: Simulink, Simscape

Publications

Jongwook Bae*, Jungho Kim*, Junyong Yun*, Changwon Kang*, Jeongseon Choi, Chanhyeok Kim, Junho Lee, Jungwook Choi, Jun Won Choi, "SiT Dataset: Socially Interactive Pedestrian Trajectory Dataset for Social Navigation Robots", Thirty-seventh Conference on Neural Information Processing Systems Datasets and Benchmarks Track, (2023)

Jongwook Bae, Young Woo Lee, Junho Koh, Jaeyoung Lee, Jun Won Choi, "Multi-Sensor Calibration Techniques for Camera-LiDAR Sensor Fusion", Transactions of the Korean Society of Automotive Engineers - Vol. 30, No. 10, pp.849-858, (2022)

Education

Boost Camp AI Tech, NAVER Connect Foundation

23/11-24/04

- Participated in an intensive AI production end-to-end course, focusing on advanced applications of CV
- Achieved 2nd place in three project competitions, demonstrating expertise in AI modeling and application
- Experienced in end-to-end service development, from stock predict modeling to deployment
- Final Project: AI-based Stock prediction service using stock image-based CNN

M.S. at Artificial Intelligence, Hanyang University, South Korea | Advisor: Prof. Jun-Won Choi 21/09-23/08

- Conducted extensive research on integrating 3D detection, Multi-sensor calibration, and SLAM models into practical robotics applications using ROS.
- Thesis: A dataset for multi-sensor object detection and tracking using unmanned ground robot
Developed a comprehensive dataset that enhances robotic 3D perception, enabling end-to-end trajectory prediction in environments with dynamic human-robot interactions.
- GPA: 4.46/4.5

NVIDIA Platform-Based Self Driving Software Development Course, Hancom Academy

05/20-10/20

- Gained comprehensive training in self driving vehicle software development, from foundational programming in C, C++, and Python, to advanced applications in AI-based perception
- Led the final project: ROS-based ADAS from 3D Object Detection to Trajectory Prediction | Awarded the IITP 2020 Project Excellence Award

B.S. at Mechanical Engineering, Inha University, Incheon, South Korea

11/03-18/02

- Thesis: A airplane baggage scale using strain gauges | Advisor: Prof. Seung-Bok Choi
Designed a scale for airport baggage handling using advanced strain gauge technology
- Coursework and Projects:
 - Automatic Control: Engineered a vibration control system for wheel loaders using MR fluid-based mounts
 - Robotics: Designed a 6-degree-of-freedom robotic arm 3D simulation using Sliding Mode Control (SMC)
- GPA: 3.65/4.5

Involvement

- Boostcamp AI Tech Project, Project Leader** | NAVER Connect Foundation 12/23-04/24
Mask Wearing Status and Age Classification Project
- Improve 20% classification accuracy by addressing data sparsity and imbalance with GAN-based age and mask-wearing image generation
 - improve 2% classification accuracy through the development of a labeling correction tool and improved data quality utilizing the tool
- Object Detection for Recycling Sorting Project
- Data augmentation, class reclassification, and training different models to address data quality and class imbalance issues
 - 11% detection improvement by applying super-resolution techniques to improve small object detection
- Development Dataset for Social Navigation Robot** | Ministry of Future Creation and Science 06/22-05/23
- Research team leader, Build datasets and propose benchmarks for Social Navigation Robots
 - ROS-based driving robots and synchronizing multisensors, collecting datasets, and managing overseas labeling company
 - Proposed academia's first end-to-end pedestrian perception dataset for a navigation robots
Build data from 60 scenes, 60K images, and 12K point cloud frames for end-to-end pedestrian Perception
 - SiT Dataset: Socially Interactive Pedestrian Trajectory Dataset for Social Navigation Robots
Accepted in NeurIPS 2023 Dataset & Benchmark Track as first author
- Sensor fusion-based multi-object tracking system for field environments** | Hanwha Areospace 03/22-05/23
- Development of a multimodal, three-dimensional, multi-object detection and path tracking model for UGV
 - Developed ROS-based multi-sensor calibration integration tool and integrated 3D perception models
 - Build large-scale datasets for object detection and multi-object tracking
20K seasonal images and point cloud frames for object detection and trajectory tracking
- Revenue Optimization Competition with Logistics Reclassification** | HD Hyundai Infracore 22/09-22/12
- Developing a CNN-GRU model to forecast demand and reallocate logistics in Europe
 - Increased revenue by 14% by collecting and utilizing additional latitude-longitude, population density, and country data based on place names in the data
- Advanced Port Object Characterization Techniques** | Korea Railroad Research Institute 09/21-11/21
- Building a Port of Busan dataset for anomaly action detection technology
 - Port of Busan action data collection and actor engagement, data labeling and validation

Work Experience

- DOSIMIRASIDO** | Assistant Instructor, Instructional Support Dept 08/23-12/23
- Supported Microsoft AI School 3, 4th Training sessions, providing project mentoring
 - Assisted to improve project success with AI project planning and execution support
- Spark Plus** | Freelancers, Marketing Dept 01/21-03/21
- Crawled and analyzed data from 80 co-working space tenants in the Seoul, South Korea
 - 300% increased in lease sign-up rate with a targeted mailing strategy based on crawled dataset
- Enlighten** | Project Manager, New Business Development Dept 08/19-04/20
- Developed B2B, B2G service: Developed and served business models for imported home appliance repair
 - Increased the efficiency of internal processes by developing automation programs for CRM and barcode recognition
- Artisan & Ocean, Inc.** | Internship, mechanical design and international marketing teams 03/18-06/18
- Contributed to the development and 3D modeling of the DIVEROID Black prototype and DIVEROID Mini
 - Supported global marketing and crowdfunding efforts, achieving 180% of the funding goal through Indiegogo